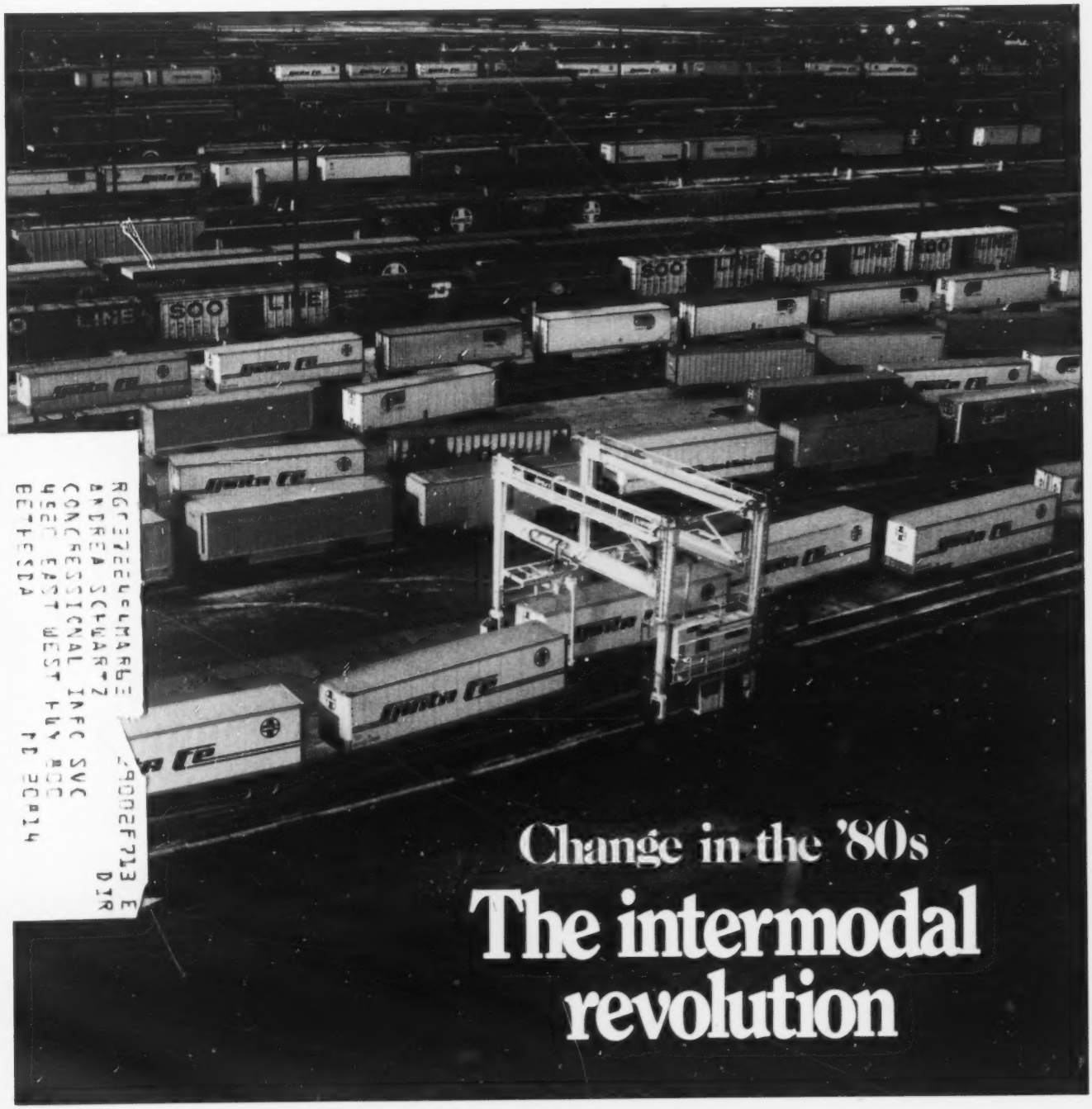
DART: A Texas-size rail transit system

May 1984

RAILWAY AGE

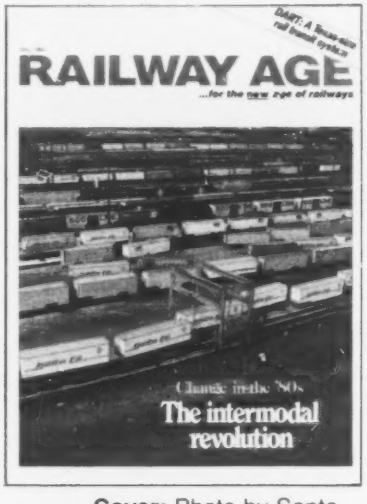
...for the new age of railways



Change in the '80s

The intermodal revolution

RAILWAY AGE
...for the new age of railways



Cover: Photo by Santa Fe System Photographer Orville Brent, Jr. *Page 35.*

Page 41.

Page 46.

Features

35 **Change: The intermodal revolution**

Piggyback for profit (and the operative word is "profit") is the railroads' goal as they seek to capture market share from the motor carriers.

41 **Coal cars: The lightweight race**

Some are in service, some are still in prototype. All will deliver more payload per pound of car. But so far, the market has been slow to develop.

46 **Track machines that work harder, faster**

Railroads want more-reliable, easier-to-maintain machines that take up minimal track time—and builders are not walking away from the challenge.

57 **CN's C&S goal: Full control**

In the West, in particular, CN is turning to communications and signaling to wrest additional productivity from an already-strained track structure.

64 **Old-line supplier goes high-tech**

Octogenarian Vapor Corp., once known as a supplier of steam heating systems, has advanced rapidly—and successfully—into the electronics age.

69 **DART: Texas-size rail transit**

With 160 miles approved, Dallas has the biggest rail plan of them all; transit vendors around the world are sitting up and taking notice.

Published monthly by the Simmons-Boardman Publishing Corporation, 345 Hudson St., New York, N.Y. 10014. USPS 449-130, Vol. 185, No. 5

Subscription rates to all railroad, rail rapid transit employees and industrial traffic department employees in the U.S. possessions, Canada and Mexico: $12 one year, $22 two years; all other countries $35 one year. All other subscriptions in the U.S., Canada and Mexico: $30 one year; all other countries: $50 one year. All subscriptions payable in advance. Single copies $3 plus postage and handling, except special issues. Copyrighted © 1984.

Address all subscriptions, change of address and correspondence concerning them to Subscription Dept., Railway Age, P.O. Box 530, Bristol, Conn. 06010.

Printed at Hughes Printing Co., 34 North Crystal St., East Stroudsburg, PA. 18301. Second Class postage paid at Bristol, CT. 06010 and additional mailing offices. POSTMASTER—SEND FORM 3579 TO P.O. BOX 530, BRISTOL, CONN. 06010.

Update

22 Integral trains could slash costs
24 ATSF-SP: What merger will mean
24 Seaboard, NS swap trackage rights
24 Conrail budgets $520 million
26 Railroads move to control quality
28 Milwaukee bidding escalates
28 EMD realigns for efficiency
28 RICS manages car maintenance
28 Winter-proof trains? Almost
28 Abex to supply ingots to Bethlehem
28 At last, a railroader's dictionary
30 BART tickets by automatic teller
30 Railbus due for Rhode Island test
30 Portland cars pass Pueblo tests
30 300 sign up for Transit Expo
30 LIRR overhauls locomotive fleet
31 PATH ridership continues to grow
31 San Diego extension under way
31 Parsons team wins Los Angeles job

Comment

5 Inside
16 Lines on Labor
19 Watching Washington
94 Publisher's Perspective

Departments

8 Meetings
11 Industry Outlook
12 Market Outlook
14 Market Indicators
32 World Report
70 Advertising Sales
74 People in the News
78 Letters
80 100 years ago
81 Products Report
89 New Literature
90 Professional Cards
91 Classified Advertising
93 Advertisers Index

Inside

Supply-side railroading

LUTHER S. MILLER

If you ever had any doubts as to the interdependence of the railroads and their suppliers, several stories in this issue should dispel them. That interdependence is, in fact, so strong that it is almost impossible to write about one without writing about the other.

Our cover story—"Change: The intermodal revolution" (p. 35)—addresses what is perhaps the single most urgent issue confronting the railroads: the need, in an economy that is shifting from smokestack to high-tech, to capture market share from the highways. *If a dozen carbuilders (and many more component suppliers) had not in recent years been investing millions of R&D dollars in new and cost-effective intermodal equipment, this story could not have been written.*

The m w story that starts on p. 46 describes technology that is permitting the railroads to haul more tonnage over less track; *it could not have been written if the track-machine builders had not plowed millions of R&D dollars into equipment that works faster and takes up less train time.*

"Coal cars: The lightweight race" (p. 41) describes efforts to increase the payload of the rolling stock that carries the railroads' single biggest commodity; *it could not have been written if half a dozen carbuilders had not invested millions of R&D dollars in prototypes* (an investment they made when many thousands of coal cars were sidelined for lack of business, and the market for new cars did not look all that good).

And then there's the news story on p. 22, about the AAR summoning suppliers to an April 3 meeting in Chicago to ask them to come up with designs for an "integral" train. (As one supplier remarked, with a mixture of gloom and satisfaction, "When the railroads need something done, they turn to us old-liners.")

All of this talk about "interdependence" might seem to be an exercise in making the obvious less obscure. But the obvious is not always that obvious. It wasn't obvious to the rail-transit industry, which drove such hard bargains with its suppliers and imposed such demands on them that, one by one, many of them were driven out of the business—with the result that today the rail-transit industry has to do much of its shopping overseas.

Freight railroad people, of course, are smarter than that. Aren't they?

Market Outlook

Equipment

American Maize Products Co.: Is leasing 60 17,600-gallon tank cars from Union Tank Car for haulage of high fructose corn syrup. The cars will have Lithcote food-grade interior linings.

Facilities

Amtrak: Will spend $1.14 million on additional improvements to its maintenance facility at Beech Grove, Ind., including purchase of a new wheel boring and hub facing machine and replacement of the Magna-Flux machine used for detecting axle defects. Amtrak has also placed a $1-million order with CalComp of Anaheim, Calif., for two IGS 500 computer-aided design (CAD) systems to be used in various electrical, mechanical, structural, and civil engineering projects.

Conrail: 1984 capital budget of $520 million includes $250 million for track, $100 million for additions and improvements, and $170 million for equipment (see p. 24).

CSX: Track improvement programs for the Seaboard and Chessie System railroads add up to $328 million for 1984. Seaboard's program calls for laying of 560 miles of cwr, insertion of 1.9 million ties, and surfacing of 7,400 miles of track. Chessie will lay 453 miles of cwr, insert 2 million ties, and surface 5,000 miles.

Saudi Railways Organization: Ordered 10 SDL50 six-axle, 3,500-hp diesel-electric locomotives, valued at $12 million, from the Electro-Motive Division of General Motors. EMD delivered six SDL50 units to Saudi Railways in 1982.

Washington Metropolitan Area Transit Authority: A $32.4-million grant from the Urban Mass Transportation Administration includes $13.9 million for Metrorail car reliability and rail improvements and $18.5 million for operating assistance.

Freight cars and locomotives

	DELIVERED March 1984	March 1983	February 1984	Three Months 1984	Three Months 1983
Built new by carbuilders	894	334	528	1,837	1,185
Built new in RR shops	0	110	0	0	200
Built new—total	894	444	528	1,837	1,385
Rebuilt	0	0	0	0	0
TOTAL DELIVERED	**894**	**444**	**528**	**1,837**	**1,385**
Locomotives (new and rebuilt)	*				
ORDERED					
To be built new by carbuilders	1,213	207	1,523	5,472	1,005
To be built new in RR shops	0	0	0	0	2
To be built new—total	1,213	207	1,523	5,472	1,007
To be rebuilt	0	0	0	0	0
TOTAL ORDERED	**1,213**	**207**	**1,523**	**5,472**	**1,007**

ON ORDER AND UNDELIVERED	April 1 1984	April 1 1983	March 1 1984	Average Backlog 1984	Average Backlog 1983
To be built new by carbuilders	6,928	3,914	6,548	6,375	4,037
To be built new in RR shops	0	2	0	0	86
To be built new—total	6,928	3,916	6,548	6,375	4,123
To be rebuilt	0	0	0	0	0
TOTAL ON ORDER	**6,928**	**3,916**	**6,548**	**6,375**	**4,123**
Locomotives (new and rebuilt)	*				

Source: Transportation Division, AAR
*Locomotive figures unavailable at press time

Estimated ownership—all revenue freight cars

March 1, 1984 vs. March 1, 1983

		Box	Covered Hoppers	Gondola	Hopper	Flat	Refg	All Others	TOTAL
Class I RRs	1984	267,774	163,863	128,967	281,583	84,116	52,945	21,767	1,001,015
	1983	277,994	165,220	133,979	291,991	85,364	55,797	23,083	1,033,428
Class II & S&T Cos.*	1984	47,107	9,547	10,221	10,767	4,811	3,166	3,053	88,672
	1983	48,934	9,638	10,344	11,134	4,136	3,354	2,912	90,452
Railbox-Railgon	1984	15,082		3,998					19,080
	1983	21,401		3,998					25,399
RRO&C** Refgs.	1984						5,790		5,790
	1983						4,415		4,415
Private	1984	545	128,377	27,797	21,653	53,765	1,314	184,545	417,996
	1983	407	130,444	27,798	21,172	54,100	3,244	186,525	423,690
GRAND TOTAL	1984	330,508	301,787	170,983	314,003	142,692	63,215	209,365	1,532,553
	1983	348,736	305,302	176,119	324,297	143,600	66,810	212,520	1,577,384

*Class II railroads and switching terminal companies.
**Railroad owned and controlled refrigerator car lines.
Source: Transportation Division, AAR.

Market Indicators

DRI Railroad Industry Monitor

The very strong growth that lifted the economy out of the recession is now giving way to more moderate expansion. The increase in GNP is forecast to slow to a 2.8% rate by the end of the year, compared to a 7.3% rate in the first quarter. DRI expects retail auto sales to level off at a 10.6 million rate for the remainder of the year, and interest rate pressures should push housing starts back down to a 1.7- or 1.8-million-unit rate for the second half. The slowdown in growth should help keep the economy from overheating this year and sliding into a recession in 1985, but it means that the battle for transportation market share will grow more intense as carriers seek to maintain their growth rates.

	1983:4	1984:1	1984:2	1984:3	1984:4	1985:1
Economic Indicators (annualized rates)						
Real GNP (% change)	5.0	7.3	4.0	4.1	2.8	2.3
Industrial production (1967 = 1.0)	1.55	1.60	1.62	1.64	1.65	1.67
Housing starts (mil. units)	1.70	2.01	1.90	1.84	1.74	1.67
Retail car sales (mil. units)	9.9	10.5	10.6	10.6	10.6	10.6
Raw steel production (mil. tons)	22.2	26.1	27.7	24.5	25.7	28.5
Total Class I Rail Traffic						
(millions of tons)	326.4	338.4	339.1	337.0	338.9	324.8
(billions of ton-miles)	216.6	223.0	220.5	215.9	221.2	225.5
Key Commodities						
Grain	36.2	36.2	30.9	28.2	30.8	32.1
Coal	124.1	133.4	129.7	130.6	137.7	130.2
Pulp & paper	9.2	9.3	9.4	9.1	9.0	9.2
Chemicals	25.5	27.3	26.7	26.0	26.1	27.9
Motor vehicles	5.6	6.1	6.4	4.8	5.7	5.4

Source: Data Resources, Inc., April 17, 1984

The economic and rail traffic forecasts represent the most likely path for the economy to take, but the growing potential for labor unrest is increasing uncertainty about the second half of the year. Coal traffic has already risen sharply as some utilities are building stockpiles in anticipation of a UMW strike. The recent announcement of large auto executive bonuses plus the vulnerability of the auto industry to a strike raises the likelihood of a walkout. Finally, the opening bargaining position of rail labor indicates that rail management may face a difficult choice this year: take a strike and incur sizeable short-term financial losses or give labor a settlement which will make it impossible for railroads to compete with trucks in a growing number of markets.

Revenue freight carloadings

Commodity	Apr. 7 week	% change from 1983	Mar. 31 week	% change from 1983	Mar. 24 week	% change from 1983	Mar. 17 week	% change from 1984
Grain	29,414	38.5	28,422	39.2	27,265	15.1	29,590	12.2
Other farm products	4,281	58.6	3,447	13.6	3,429	9.9	3,343	(3.0)
Metallic ores	15,210	5.8	18,203	54.4	16,666	39.0	17,100	42.1
Coal	113,236	17.8	121,171	41.1	118,000	25.4	121,223	22.1
Crushed stone, gravel and sand	10,783	19.3	9,898	26.1	10,270	23.8	9,682	16.7
Nonmetallic minerals	11,243	4.2	12,703	37.4	12,388	17.9	11,903	(0.2)
Grain mill products	10,368	(1.4)	11,326	4.8	11,038	(4.8)	11,467	(0.1)
Food and kindred products	10,819	(9.2)	11,536	3.6	10,948	(8.7)	10,720	(8.8)
Primary forest products	13,962	(0.7)	13,996	(3.6)	14,399	1.1	14,517	(2.7)
Lumber and wood products (except furniture)	7,523	15.5	8,599	23.0	8,048	7.0	7,835	7.1
Pulp, paper and allied products	15,180	3.5	15,948	2.7	14,916	(3.3)	14,893	(3.3)
Chemicals and allied products	24,812	10.2	26,836	18.1	25,948	9.5	26,069	10.5
Petroleum products	5,180	18.3	4,526	17.5	4,550	9.7	5,028	11.5
Stone, clay and glass products	11,263	18.9	11,125	18.7	11,074	19.3	11,059	15.3
Coke	5,636	21.0	5,369	26.1	5,677	9.6	5,239	7.5
Metals and products	10,911	26.7	11,330	24.3	10,827	19.2	10,496	17.1
Motor vehicles and equipment	21,297	39.7	21,795	43.4	21,208	28.1	21,406	28.1
Waste and scrap materials	10,069	30.0	10,902	48.5	10,519	29.2	10,664	25.8
Forwarder and shipper assn. traffic	8,035	0.3	7,509	(13.4)	7,637	(13.4)	7,394	(16.1)
All other carloads	60,350	36.5	61,993	30.9	59,193	22.2	59,735	26.8
LCL traffic	272	33.3	301	42.7	285	25.0	253	(0.8)
Total Cars Loaded	**399,844**	**18.7**	**416,935**	**28.2**	**404,285**	**16.8**	**409,616**	**15.2**

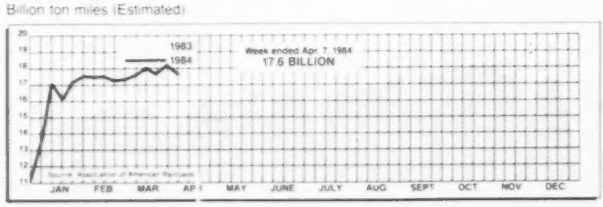
Estimated revenue ton-miles (billions)	1984	1983	% change from 1983
14 weeks	240.7	210.6	14.3

Piggyback loadings

Week ended	Cars loaded 1984	% increase from 1983	Trailers containers 1984	% increase from 1983
March 10	51,189	19.0	89,347	20.3
March 17	52,415	21.8	92,303	25.6
March 24	51,964	18.8	91,234	22.3
March 31	55,201	29.7	93,296	26.2
Cumulative total,				
13 weeks	643,792	18.2	1,125,126	20.3

Rail freight traffic trends

Billion ton miles (Estimated)



Roy Blanchard

The intermodal revolution

The message is clear: If railroads are to grow, they have to win traffic from the highways. The big question now is: Can they do so at a profit? The signs look promising.

By GUS WELTY,
Senior Editor

With the U.S. economy likely to be going through a stage of low and selective growth, the railroads' best hope for growth—for the rest of the 1980s and perhaps for the rest of the 20th century and beyond—lies in increasing market share.

And the best hope for increasing market share lies in increasing intermodal business—on, of course, a profitable basis.

A number of signs indicate that the industry will be able to turn this hope into reality.

For one thing, most if not all major intermodal operators are abandoning the counter-productive approach of trying to maintain a piggyback ramp at every location on the system where there may be a few trailers to be had. The efficient, high-volume, mechanized hub center is being recognized as the way to go, and it's the way most roads are going.

For another, the industry as a whole seems finally to be getting a firm grip on development of equipment for the next phase of intermodal operation. Not so awfully long ago, there were concerns that the industry was drifting away from some of the things that made piggyback work so well in the first place—such things as standardization and interchangeability and pooling in the areas of equipment design and fleet management. Now, however, a consensus seems to have been rebuilt, that despite the mergers that have created mega-railroads and despite the changes that are taking place in the makeup of the highway trailer fleet, those old qualities still are and will continue to be valuable ones to have around.

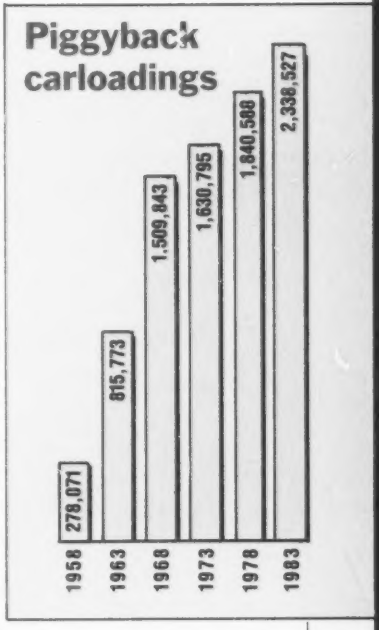
In addition, while individual railroads are going about the marketing of TOFC/COFC services in widely varying ways, there are successes being recorded from both basic approaches, wholesaling and retailing of intermodal.

But, as might be expected, not all the signs are positive.

For example, since its deregulation, the motor-carrier industry has been ever more fiercely competitive. The proliferation of owner-operators, the creation of non-union carriers, and the granting of wage-and-rule concessions by the Teamsters to unionized operations have all contributed to downward pressure on rates and to overcapacity in the trucking industry.

For example, despite the efficiencies made possible by the streamlining of terminal operations and through the use of new, lighter-weight and more fuel-efficient railcar equipment, railroads still are having a tough time staying competitive in the mileage ranges where high volumes of highway traffic could and should be available for rail movement via piggyback.

For example, with the makeup of the highway trailer fleet changing and with more change likely to come, Trailer Train, the railroads and the car-



Change

Orville Brem

Well-designed and mechanized terminals are the key to keeping trailer/container handling costs down and service up.

builders are being pressed to cope with what's happening, while they're also being asked to predict what further changes will be coming along during the life of the railcar equipment being designed, built and bought.

And, for example, there is long-standing and continuing concern about margins, about profitability. Given the facts of competitive life as they exist and as they are likely to continue to exist, it would appear that profitability improvement will have to come in large part on the cost side and not on the rate side. Better cost control, of course, means many things—but of vital importance will be better control of labor costs. This means that rail labor, too, will have to become a believer in intermodal as the best hope for the future.

The challenges are daunting, but the stakes are high—and the game is one that the railroad industry cannot afford to lose, especially in view of the pessimistic forecasts that are being made regarding available traffic volume in markets that have traditionally been strongly rail-oriented.

Internally, what intermodal comes down to are matters of controlling costs more effectively and of more effectively marketing what is already, for the most part, an excellent service.

John B. Corns

With volume and revenue growth in every quarter since it was set up, CMX gives the CSX roads a strong retail presence.

Consider first, the marketing aspects. In few areas of railroading are there more pronounced philosophical differences than in the approach to intermodal marketing—with some roads strongly for wholesaling, some strongly for retailing and some hedging bets by trying for a blend of the two.

Consider the approaches that have been taken by Santa Fe and Chessie System.

Santa Fe has aimed its marketing strategies at being a wholesaler providing an efficient and cost-effective ramp-to-ramp service. Business has grown, to more than 705,000 trailers/containers handled last year, which was upwards of 30% of all trailers/containers loaded by western carriers. Intermodal traffic generated about one third of Santa Fe's total 1983 freight revenues. And the volume of traffic being generated by third-party accounts also continued to grow, to almost 90% of the total.

This hasn't happened by accident. As Vice President-Traffic Thomas J. Fitzgerald notes, early in the development of piggyback, Santa Fe saw intermodal as a flexible and cost-effective service. Santa Fe also recognized, Tom Fitzgerald says, "many of the obstacles and pitfalls in marketing and operating intermodal services which had to be overcome if intermodal would in fact fulfill the industry's needs and our own expectations."

Santa Fe, he says, "quickly became aware that we had to market intermodal as a unique element in the transportation service market and not merely as an add-on to existing rail operating and marketing programs. Intermodal by definition draws from many disciplines and goes well beyond the scope of everyday rail operations. To develop effective intermodal programs, we had to determine how to adapt the inherent marketing and operating advantages of the rail and truck modes to bring about the greatest efficiencies of each."

On the operating side, Santa Fe concentrated on providing the equipment that would be needed, on mechanizing its major terminals, and on building a fleet of high-speed, dedicated intermodal trains in its major traffic corridors. All of this represented, Fitzgerald says, concentration "on areas in which we felt we could provide the most expertise."

On the marketing side, Santa Fe concentrated on wholesaling. And what advantages did it see third parties bringing to the table? "First, in the aggregate, broader geographic and customer coverage by an aggressive sales force. Second, the ability to put together transportation packages involving multiple rail carriers that, absent a mediating force, might find coordination difficult. Third, assumption by the third party of responsibility for handling customer service with beneficial owners, including tracing, claims and billing, all areas where the third party is the inherent low-cost producer. Fourth, the ability to arrange drayage with a multitude of independent owner-operators, who are customarily the low-cost producers of these services. When you add it all up," Tom Fitzgerald concludes, "we see a valuable and continuing role for third parties in this growth end of our business."

If there is a philosophical spectrum to the marketing of intermodal services—and there is—Santa Fe is positioned at one end, Chessie System at the other.

Chessie has no quarrel with the development of services involving third parties. But, as Chessie Motor Express President Leonard C. Schaffel has pointed out, the brunt of the trans-

portation obligation lies with the railroad: "It's the investment in locomotives, flatcars, trailers and ramp facilities that makes intermodal services a reality. The railroad has not only a right to package its product in the best possible manner but also a responsibility to the public to protect an innovative and economical method of transportation. That protection can and should be a mixture of services provided to third parties to fill a need and a direct exposure to the public to offer similar services on a one-on-one basis."

So, Chessie gave birth to Chessie Motor Express late in 1980, and CMX has shown steady growth, quarter by quarter, without an exception, ever since.

In its first full quarter, January-March 1981, CMX handled fewer than 1,900 trailers, and its revenues came in at under $300,000. But in the fourth quarter of 1983, CMX handled 38,658 truckloads, and its revenues were $10,886,000. For the full year, CMX handled 130,910 units, an increase of 108% from 1982, while its 12-month '83 revenues were up by $18.1 million, to $33.4 million.

In the CMX view, exemption from regulation for piggyback traffic gave railroads the opportunity "to vigorously enter the marketplace and enlarge their share of this type of traffic." But, in that same view, some railroads waited instead for the marketplace to come to them, "and the marketplace certainly did come, dominated by third-party entrepreneurs." The entrepreneurs asked for lower wholesale rates in order to increase their share of the retail market, and when railroads agreed they "not only lowered their profit margin, they slowly but very surely enabled certain retailers to corral a large segment of the market."

What CMX's Schaffel saw coming, months ago, was a situation in which lack of profit could lead to cutbacks in schedules and in capital expenditures for equipment and ramps, as well as attempts to improve the profit situation by increasing rates. With such trends, "we could see an erosion of traffic back to the highways. The loyalty of the third-party entrepreneurs will be severely tested. They will be tempted to negotiate with over-the-road carriers to perform services previously provided by railroads."

Even before the piggyback exemption was granted, Schaffel recalled, Chessie determined that "a complete, door-to-door, one-carrier-responsibility form of transportation was necessary in order to capture the interest of the sophisticated shipping community. Chessie realized that by developing their own sales base and direct shipper relationships they could create shipper loyalty and offer shippers economy without erosion of the lifeblood of any viable business enterprise—profit."

New-generation equipment is shaking down to basic designs for articulated and single-platform cars, plus well cars for container-stacking.

But, across the philosophical spectrum, there remains that nagging matter of profit.

Tom Fitzgerald at Santa Fe says that "the question of profitability continues to be a problem." CSX says that "profit levels on intermodal traffic remained marginal in 1983, reflecting a highly competitive environment and the excess capacity of the various transportation modes."

However they approach the marketing of intermodal, one hope for the railroads is that price levels in the motor-carrier area will firm up and even go up, as truckers try to make up for the losses experienced over the past several years.

Motor-carrier pricing, however, is likely to remain a mixed bag, and there is no guarantee that rates will rise to a point where railroads can safely try to improve profitability by concentrating on the pricing side of the equation.

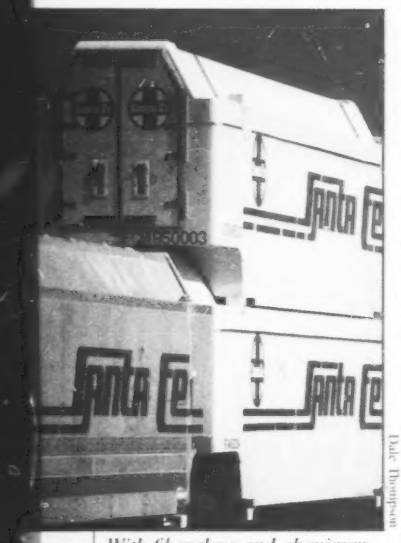
Railroads, meanwhile, are faced with definite problems in cost reduction, especially if the opportunities for rate increases are limited. And the numbers have not been running in the railroads' favor, not for years and not now.

The railroad share of market as compared with the truck share, for example, has been dropping, before and since deregulation. By one estimate, the rail share of movement of manufactured goods fell from more than 37% two decades ago to well under 20% in the most recent year for which hard numbers are available. In the past decade, the motor carriers' share of intercity-transportation dollars has risen slightly, while the

Dale Thompson

As intermodal volume grows, so does the need for greater efficiency in scheduling, dispatching, and handling the records.

Change



Dale Thompson

With fiberglass and aluminum prototypes available for testing, Santa Fe has high hopes for its double stack container system.

Improvements in trailer design, among them use of floor-mounted anchor rails, will open up intermodal to more commodities.

rail share has gone down rather more sharply. No matter who's doing the measuring, for whatever period in recent history, the railroads have suffered and the truckers have benefitted. Rail labor should have an interest in these market-share numbers. But rail labor should have an even bigger interest in how the numbers have translated so far as jobs are concerned: Twenty-five years ago, employment in the two industries was about even—but as of the middle of last year, employment in the trucking industry was three times what it was in the railroad industry.

Add to this the studies developed by such roads as Burlington Northern, and it becomes clear that railroads are going nowhere in TOFC/COFC unless and until they can bring costs under control.

What the BN study indicated was, first, that 700 miles was about the break-point so far as its intermodal competitiveness is concerned. Second, the study showed that the break-point could be reduced significantly, through use of more efficient railcar equipment, through completion of its hub-center terminal-modernization program, and through elimination of empty backhauls. Dropping the break-even point by 150 miles or so, BN found, would open up a lot more over-the-highway business for conversion to piggyback.

What the BN study also found was that increases of the magnitude of those included in the current labor agreements would negate all the gains in operating, terminal and equipment improvements that might be made. And in their demands in the new round of negotiations the unions—first the operating organizations and now the non-ops—are asking for far more than the wage-benefit increases under the current agreement which was negotiated several years ago. At the same time, the organizations show little or no inclination to relax things in terms of work rules.

To these economic factors has to be added the fact that motor carriers are going to be increasing their own efficiency. They have the concessions made by their major union. They have the research-and-development efforts being made by highway-tractor and -trailer manufacturers to do what railroad suppliers are doing, namely to increase the efficiency of the equipment. They have governmental agencies providing and maintaining their right-of-way, and they have the new benefits of being able to operate longer, wider and heavier rigs, as well as double-bottoms, on major highways without having to worry about state-imposed restrictions. Truckers will be paying more in taxes for the privilege. But few observers think that the increase in payments will come near to offsetting the economic benefits that have been granted.

While all of this has been going on, Trailer Train has been plugging away, trying to develop the next generation of intermodal cars and trying, at the same time, to work out the economic arrangements that will make provision of cars by TT attractive from both a technol gical and an economic standpoint. At this point, Trailer Train appears to be succeeding on both counts.

If there is an equipment question, it has to do with what government has already permitted in terms of trailer sizes, and in terms of what government might permit next. For example, the numbers show that the number of long trailers is steadily increasing. Just seven years ago, the number of trailers which could be called "short" represented 78% of the fleet, with just 22% of trailers measuring in at 45 feet or more. But for 1982, the percentage of short trailers had dropped sharply, and the number of 45-foot units had climbed to 40%. Figures for '83, when they're available, will no doubt show another increase in the 45-foot-and-longer units and another drop in the 40-foot-and-under fleet, relieved only by a new interest in 28-foot pups for use in double-bottom operations.

So, intermodal is changing. No area of railroading, probably, is changing so rapidly. No area of railroading may be so important, tomorrow and the day after. And so in no area of railroading will action, reaction, be so important.

And right now, there are a lot of things that are going to matter, if railroads are going to turn the hopes into reality.

The first is that TOFC/COFC has to be moved out of the marginally-profitable realm into an area where top management can really be committed to improvement in facilities, equipment and service.

Look at it this way: The economy is turning from producing to service. Producers are having to handle smaller inventories, and to put smaller inventories into the hands of their customers. Shippers and receivers want better service, with smaller-lot shipments. Consumers, at the end of the line, are demanding lower costs, lower prices.

Railroads will move the goods demanded for the economies of the 1980s and the 1990s if they do it intermodal-style. But those goods won't move by rail unless the price is right.

The service now is good, and it will continue to be. It's rail management's job—and rail labor's—to make sure that the price is as good as the service.

Otherwise, intermodal's future isn't there. ■

NOTE

ONLY THE FOLLOWING PAGES OF THIS

PUBLICATION HAVE BEEN FILMED

Cov. 1, p. 4-5, 12, 14, 27.

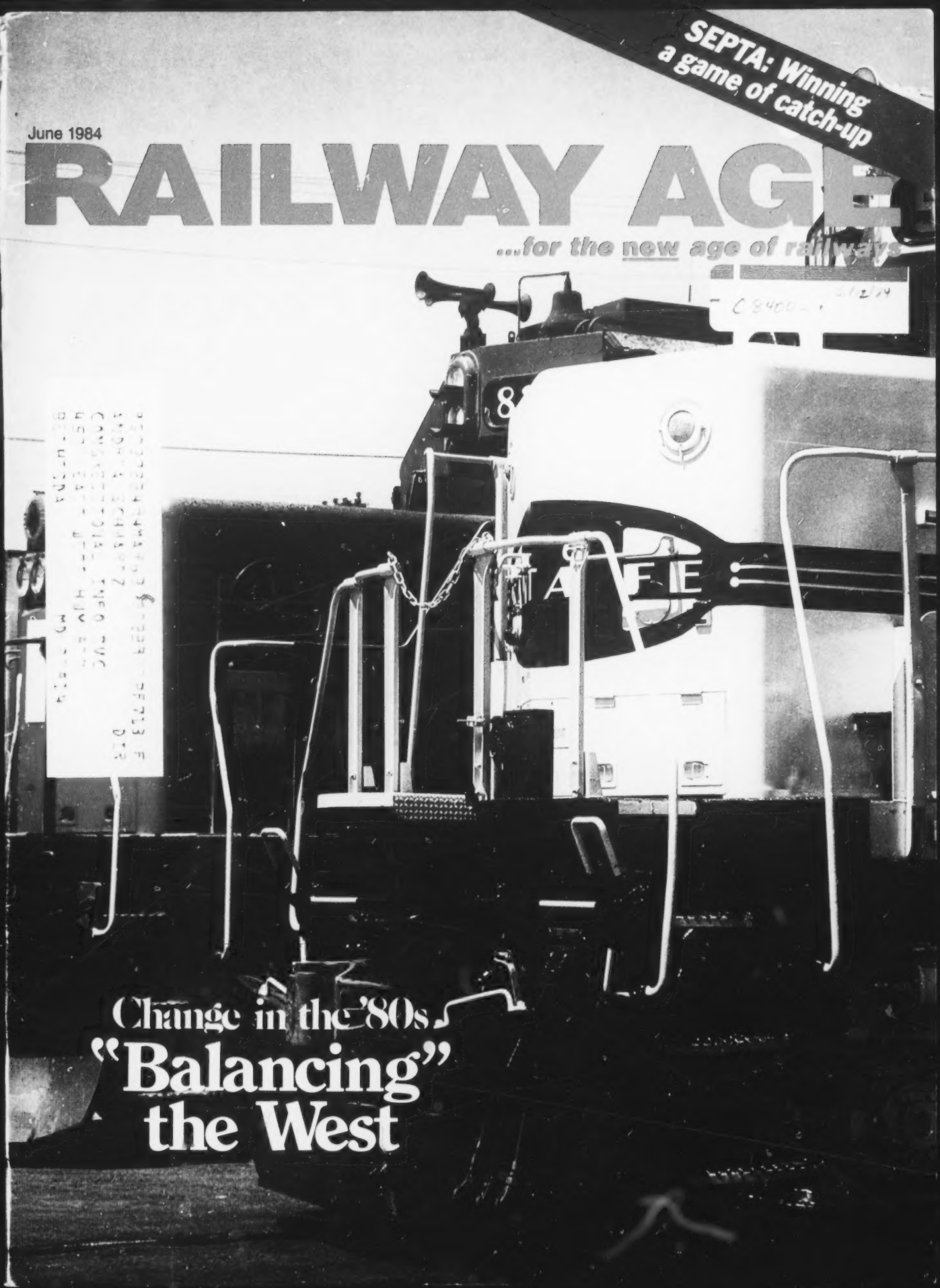
JUNE 1984

June 1984

RAILWAY AGE

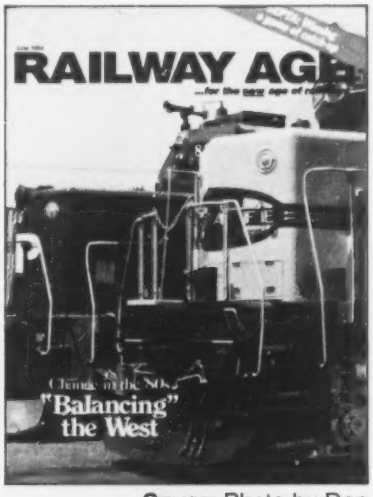
...for the new age of railways

SEPTA: Winning a game of catch-up



Change in the '80s "Balancing" the West

RAILWAY AGE
...for the new age of railways



Cover: Photo by Don Erb. *Page 35.*

Page 44.

Page 66.

Features

35 Change in the '80s: "Balancing" the West

The combined benefits of merger and deregulation have tipped the scales in favor of BN and UP. By joining forces, Santa Fe and SP hope to restore a balance.

40 Here come the robots!

In railroad and railroad supplier shops, the application of robotics is fairly new, but it's growing—and there could soon be a veritable robot population explosion.

44 Ties and fastenings: Guardians of the gauge

The timber-tie cut spike combination is still the standard. But direct-fixation fastenings and other-than-wood ties are mounting a challenge.

54 CP Rail signals for greater capacity

CP, which is spending hundreds of millions on new construction in the West, is also investing heavily in C&S to increase the productivity of its existing track.

61 Will this Pegasus fly?

Pullman Standard Manufacturing is entering the lightweight coal-car race with a mostly-aluminum unit that weighs 41,400 pounds and can carry 111,000 pounds.

63 Alaska's "battleship" car

Tailored in its present version to meet the rugged requirements of the Alaska Railroad, the versatile new PCF car can easily be adapted for the Lower 48.

66 SEPTA: Winning a catch-up game

The Philadelphia agency is recovering from the trauma of taking over Conrail commuter operations, and is showing improvements in its other transit services.

Published monthly by the Simmons-Boardman Publishing Corporation, 345 Hudson St., New York, N.Y. 10014 USPS 449-130, Vol. 185, No. 6

Subscription rates to all railroad, rail rapid transit employees and industrial traffic department employees in the U.S. possessions, Canada and Mexico: $12 one year, $22 two years; all other countries $35 one year. All other subscriptions in the U.S., Canada and Mexico: $30 one year; all other countries: $50 one year. All subscriptions payable in advance. Single copies $3 plus postage and handling, except special issues. Copyrighted © 1984

Address all subscriptions, change of address and correspondence concerning them to Subscription Dept., Railway Age, P.O. Box 530, Bristol, Conn. 06010.

Printed at Hughes Printing Co., 34 North Crystal St., East Stroudsburg, PA. 18301. Second Class postage paid at Bristol, CT. 06010 and additional mailing offices. POSTMASTER—SEND FORM 3579 TO P.O. BOX 530, BRISTOL, CONN. 06010

Update

21 Advanced control systems sought
22 Portec car key to cement move
22 ICG signs fiber optics pact
27 PFE's "breakthrough" thermostat
27 Twelve railroads beat the average
27 UP's new-power program
28A Iowa crossbucks go reflective
28A Chessie opens coal-car facility
28A NS: Going multimodal?
29 CP Rail cuts fuel costs by 7%
29 The safest railroads
30 Miami celebrates opening day
30 Amtrak ridership increases 6.7%
30 LIRR to purchase Conrail branch
30 Toronto gets its first ALRT's
30 Want to rent a train? Call BART
30 For NJ Transit, a new shop complex

Comment

5 Inside
16 Watching Washington
18 Lines on Labor
94 Publisher's Perspective

Departments

8 Meetings
11 Industry Outlook
12 Market Outlook
14 Market Indicators
32 World Report
71 Track Train Dynamics Newsletter
76 People in the News
78 Products Report
82 New Literature
88 100 years ago
89 Professional Cards
90 Classified Advertising
93 Advertising Sales
93 Advertisers Index

Inside

A delicate balancing act

LUTHER S. MILLER

The courtship of the Southern Pacific by the Santa Fe (or was it the other way around?) was not an easy one. At one time the parties huffily called the whole thing off. It soon became clear that not only could two live cheaper than one, but that, together, their chances for survival in the rough-and-tumble New West would be considerably enhanced. So the banns have now been posted at the ICC. How this marriage, if consummated, could help achieve a balance of power in the West is the subject of Senior Editor Gus Welty's cover story in this issue (p. 35).

Will this be the last of the major mergers? Maybe. Maybe not. It all depends on what happens to Conrail.

Two leading contenders for Conrail's hand—encouraged by matchmaker DOT—have been Norfolk Southern and CSX. But now Conrail Chairman Stanley Crane has been heard from, and he sees union with either as more baleful than blissful. Watching Washington (p. 16) will tell you why.

China by rail, anyone?

Everyone, it seems, is touring China these days; but few are doing it in the style that has become the hallmark of the *Railway Age International Railway Journal* Professional Rail Tours, of which the third is scheduled for Oct. 19-Nov. 3 of this year.

The Railway Age IRJ delegation, which I will head this year, will travel some 2,500 miles in one of a handful of deluxe private railway cars that the Ministry of Transport reserves mainly for Chinese political leaders and visiting heads of state. While the tour will be heavily oriented toward professional railroading, there will also be ample opportunity to see exotic sights—such sights as the Great Wall, the Ming Tombs, and the Forbidden City.

The professional part of the program will include optional visits to a large number of railroad installations—a hump yard at Peking that classifies up to 20,000 cars a day; a signal factory at Xian; the Nan Ko Rolling Stock Machinery Works; the "February 7th" Locomotive Factory; the technologically-dazzling Chengdu/Kunming railway line; the Peking Metro; a railway test track. Suppliers will have the oportunity to make technical presentations to Ministry of Railways officials.

Our delegation will leave San Francisco Friday, Oct. 19, and end up in Hongkong Saturday, Nov. 3. Further information is available from Roman Specialty Tours, P.O. Box 1607, Lafayette, Calif. 94545, tele. (415) 284-9180.

Market Outlook

Equipment

CN Rail: In addition to the previously announced purchase of 48 new locomotives from EMD and Bombardier at a cost of $80 million (Canadian), CN Rail will spend $22.7 million this year to remanufacture 32 1,750-hp units and $16.7 million to rebuild 500 electric traction motors. The work will be performed at the Pointe St. Charles shops in Montreal.

• Will also invest $20 million in new m/w equipment this year. The following contracts have already been awarded: Tamper Division of Canron Inc.—three combination tampers, two production tie inserters, two tie gang spikers, $1.4 million; Bert Pyke Limited—three combination ballast regulators, two on-track brush cutters, eight tie cranes, $1.2 million; Kershaw Manufacturing Canada Limited—five combination ballast regulators, $600,000; Plasser Canada Limited—one ballast undercutter, two combination tampers, one turnout tamper, $1.9 million. CN will also acquire, for a total of $1.8 million, three tie gang spikers from Eastern Railway Supplies and Prairie Equipment Limited; two production tie inserters from Loram; one front end loader from Clark Equipment; a speed swing machine from Pettibone Corp; a grader from Champion Road Machinery; a container handler from Raygo Wagner; and three highway tractors from Ford Motors.

CP Rail: A planned $7-million track-machine program for 1984 includes the following purchases that have already been made: from the Tampo Division of Canron, seven production tampers, three spike drivers, one laser liner attachment and one switch undercutter, $1.7 million; from Bert Pyke Limited, seven tie spacers, one 18-ton rail-mounted crane and one brush cutter, $900,000; from Modern Track Machinery Canada Ltd., 11 power track wrenches, four rail grinders, two rail lifters and two hydraulic spike pullers, $135,000.

Maryland DOT: Ordered 11 stainless steel push-pull cars from Sumitomo at a total cost of $10,386,000, with an option for four additional cars. Delivery is to be completed by the end of 1985.

Massachusetts Bay Transportation Authority: Signed a $52-million contract with UTDC (USA) Inc. for the supply of 56 Red Line rapid transit cars. The cars will be manufactured by Can-Car Rail of Thunder Bay, Ont., a subsidiary of UTDC Ltd. and Hawker Siddeley of Canada; final assembly will take place within the Boston area.

Soo Line: Ordered six 3,000-hp SD40-2 diesel-electric units from Electro-Motive Division of General Motors.

Union Pacific System: Ordered 60 3,600-hp SD50 diesel-electric units from Electro-Motive Division of General Motors at a cost of $66.5 million. The locomotives are being acquired for operation on Missouri Pacific, and deliveries are scheduled to begin in September. (Details on p. 27).

Freight car orders and deliveries

	DELIVERED				
	April		March	Four Months	
	1984	1983	1984	1984	1983
Built new by carbuilders	722	205	894	2,559	1,390
Built new in RR shops	0	0	0	0	200
Built new—total	722	205	894	2,559	1,590
Rebuilt	0	0	0	0	0
TOTAL DELIVERED	**722**	**205**	**894**	**2,559**	**1,590**
	ORDERED				
To be built new by carbuilders	672	614	1,213	6,144	1,619
To be built new in RR shops	0	1	0	0	3
To be built new—total	672	615	1,213	6,144	1,622
To be rebuilt	0	0	0	0	0
TOTAL ORDERED	**672**	**615**	**1,213**	**6,144**	**1,622**

	ON ORDER AND UNDELIVERED				
	May 1		April 1	Average Backlog	
	1984	1983	1984	1984	1983
To be built new by carbuilders	6,742	4,323	6,928	6,467	4,108
To be built new in RR shops	0	3	0	0	65
To be built new—total	6,742	4,326	6,928	6,467	4,173
To be rebuilt	0	0	0	0	0
TOTAL ON ORDER	**6,742**	**4,326**	**6,928**	**6,467**	**4,173**

Source: American Railway Car Institute

Facilities

CN Rail: Purchased 165,000 tons of rail, worth approximately $105 million (Canadian), for the railway's 1984-1985 track program. This is 25,000 tons more than CN purchased last year. Sydney Steel Corp. will supply 125,000 tons of standard carbon and high silicon steel rail worth almost $80 million; Algoma Steel will furnish 33,000 tons of standard carbon steel rail worth about $20 million; and Japan will supply about 7,000 tons of premium rail worth $5 million.

Singapore Mass Rapid Transit Corp.: Awarded a $23-million contract to Cubic Western Data to supply an automatic fare collection system—a turnkey contract calling for Cubic to design, produce and install nearly 1,000 major pieces of equipment at 44 stations.

Market Indicators

DRI Railroad Industry Monitor

The latest Data Resources, Inc., forecast is optimistic about continued economic growth, but the risk of an overheated economy followed by a 1985 recession remains substantial. If growth slows enough during the next months to ease the demand for credit and the pressure on interest rates, then the prospects for continued growth are good. However, if growth does not begin to taper off, a clash between private-sector credit demand and the need to finance the federal deficit appears inevitable, with a brief recession in 1985 and early 1986 the likely outcome.

	1983:4	1984:1	1984:2	1984:3	1984:4	1985:1
Ecomonic Indicators (annualized rates)						
Real GNP (% change)	5.0	8.3	3.8	3.9	2.2	2.0
Industrial production (1967 = 1.0)	1.56	1.60	1.62	1.65	1.66	1.67
Housing starts (mil. units)	1.70	1.95	1.83	1.77	1.68	1.61
Retail car sales (mil. units)	9.9	10.6	10.6	10.5	10.4	10.4
Raw steel production (mil. tons)	22.2	26.1	27.7	24.5	25.7	28.5
Total Class I Rail Traffic						
Millions of tons	326.4	338.4	339.0	337.1	339.0	323.7
Billions of ton-miles	216.6	223.0	220.1	215.6	220.6	224.4
Key Commodities						
Grain	36.2	36.2	30.9	28.2	30.8	32.1
Coal	124.1	133.4	129.7	130.6	137.7	128.9
Pulp & paper	9.2	9.3	9.4	9.1	9.0	9.2
Chemicals	25.5	27.3	26.6	25.9	26.0	27.8
Motor vehicles	5.6	6.1	6.4	5.0	5.9	5.5

Source: Data Resources, Inc., May, 14, 1984

Even though DRI expects a potential credit-clash recession to be relatively mild, the railroad industry would feel the impact. Under the recession scenario, railroads would produce about 1% more revenue ton-miles through the second quarter of 1985, but after that, the recession would drive ton-miles 4% to 7% below the trend forecast. The possibility of this downturn is particularly troublesome for freight car and locomotive manufacturers. Until the government acts to reduce the deficit and lower the chance of a recession in 1985, railroads will be very cautious about ordering new equipment.

Revenue freight carloadings

Commodity	May 12 week	% change from 1983	May 5 week	% change from 1983	Apr. 28 week	% change from 1983	Apr. 21 week	% change from 1983	Apr. 14 week	% change from 1983
Grain	23,482	14.1	24,075	10.4	23,891	13.3	25,231	12.2	29,660	42.8
Other farm products	3,900	4.0	3,765	0.6	4,175	8.9	4,351	21.0	4,435	23.9
Metallic ores	18,673	(10.1)	18,236	(11.5)	17,600	(14.6)	16,756	6.8	16,946	7.3
Coal	109,102	6.6	117,731	17.0	109,726	11.5	120,973	23.7	120,068	22.9
Crushed stone, gravel and sand	12,704	16.9	11,727	11.1	11,703	19.8	11,370	13.8	10,968	16.1
Nonmetallic minerals	11,153	(4.5)	11,300	9.4	12,717	8.0	11,566	0.0	10,943	(12.2)
Grain mill products	10,643	(7.7)	10,889	(3.3)	10,202	(9.3)	9,953	(12.4)	10,505	(12.7)
Food and kindred products	10,450	(12.4)	11,010	(7.4)	10,847	(12.1)	10,253	(19.1)	11,200	(8.6)
Primary forest products	14,007	(10.3)	13,799	(10.3)	14,666	(4.7)	13,989	(9.5)	14,304	(3.1)
Lumber and wood products (except furnitule)	7,184	(2.4)	7,317	1.7	7,914	2.6	7,277	0.5	7,616	8.3
Pulp, paper and allied products	14,574	(3.3)	14,768	(2.1)	14,859	(3.8)	14,277	(4.2)	14,435	(5.5)
Chemicals and allied products	25,639	11.0	26,210	10.4	26,759	8.1	24,250	6.5	26,368	19.4
Petroleum products	4,658	1.2	4,863	3.5	5,147	(0.4)	4,538	(5.7)	5,140	10.6
Stone, clay and glass products	12,144	7.3	11,834	10.5	11,797	11.0	11,205	7.5	11,380	11.2
Coke	5,602	19.1	5,942	22.3	5,845	20.4	5,548	16.6	5,558	19.3
Metals and products	10,357	27.7	11,322	41.4	10,689	9.5	10,422	16.8	10,531	23.3
Motor vehicles and equipment	21,166	17.6	20,857	16.5	20,054	12.5	18,237	3.1	20,799	18.5
Waste and scrap materials	10,273	17.9	9,787	19.6	10,038	15.6	9,381	10.4	10,538	20.9
Forwarder and shipper assn. traffic	7,380	(9.7)	7,206	(14.1)	7,035	(18.4)	6,896	(22.3)	7,502	(13.6)
All other carloads	60,234	22.8	60,813	23.0	58,117	11.7	57,213	19.1	60,490	24.6
LCL traffic	248	(3.1)	226	(11.0)	233	2.6	246	(2.8)	270	14.4
Total Cars Loaded	**393,573**	**7.1**	**403,677**	**10.7**	**394,014**	**6.4**	**393,932**	**10.1**	**409,656**	**15.4**

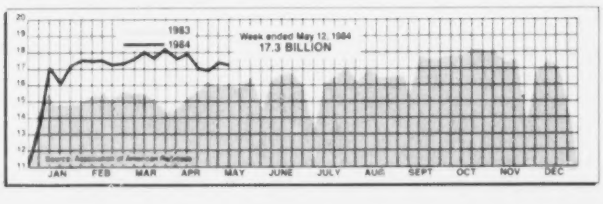
Estimated revenue ton-miles (billions)	1984	1983	% change from 1983
19 weeks	327.8	288.8	13.5

Piggyback loadings

Week ended	Cars loaded 1984	% increase from 1983	Trailers containers 1984	% increase from 1983
April 7	53,901	38.8	89,795	34.0
April 14	52,917	21.7	89,987	18.6
April 21	50,453	14.0	85,368	11.8
April 28	50,406	9.8	84,686	7.1
May 5	52,648	17.4	88,445	14.4
Cumulative total, 18 weeks	904,132	18.7	1,567,585	19.6

Rail freight traffic trends

Billion ton miles (Estimated)



Update

Microprocessor controls new PFE thermostat

Digital Dynamics Inc. (DDI) has produced a microprocessor-based thermostat for Pacific Fruit Express that PFE calls "a breakthrough in refrigeration control technology."

A prototype REMAT (for Refrigeration Monitor and Telemetry) system passed a critical test when a carload of iceberg lettuce arrived in San Antonio, Tex., in perfect condition after a five-day trip from Huron, Calif. PFE has decided to equip its entire 4,500-car fleet with the system over the next two years; 500 of the cars will have the new thermostats by September. Some 20 of these will have a fuel-saver option designed to monitor and control fuel consumption of the diesel engine used to power the refrigerator.

PFE says REMAT performs six basic functions: "Air temperature control to +/−0.25 degrees Fahrenheit; discharge air temperature limited control to protect loads from top freezing; automatic 'real-ice' calibration of the temperature sensors; failsafe watchdog system monitor and backup; 30-day record log of temperatures, power up/down and set point entry events; continuous transmission of the historical log file and current data via a panel-mounted infra-red emitting diode (IRED)...The accuracy of REMAT is possible because of a unique sensor developed by DDI which places the electronic sensing element inside a glass vial filled with a pure chemical and surrounded by a small heater element. When the computer decides to perform a calibration, it uses the heater to melt the chemical, then turns off the heater and monitors the temperature as it cools. When the chemical undergoes phase change back to a solid, the temperature briefly stops falling due to the release of the heat of fusion. The computer notes the sensed temperature at that instant, and then compares this reading to the true melting point stored in its permanent memory. If necessary, a correction factor is computed and stored in the computer's battery protected memory to correct future measurement. Since the chemical's melting point will not change with time, the basic REMAT accuracy is assured indefinitely."

James B. Jerde, president of Digital Dynamics, says the "real-ice" calibration is a "truly unique" feature in thermostat design. He also believes the data logging and continuous transmission of the log file "may someday be recognized as a technological landmark, pioneering similar designs in virtually every industrial control field."

PFE's Raymond H. Barker with new REMAT system, which senses both return and discharge air temperature and regulates the entire refrigeration system.

This telemetry feature means that a PFE maintenance technician outside of a car, using a hand-held readout device, can within two seconds collect a 30-day history of the system's temperature control performance and other data for evaluation.

Accompanying the test shipment to San Antonio, in the Southern Pacific business car "Pine Bluff," were DDI's Jerde and two PFE officers—Thomas D. Ellen, vice president and general manager; and Raymond H. Barker, division general manager-protective services. Ellen said REMAT would allow PFE to offer its customers "the highest confidence level available in the refrigerated cargo shipping industry."

Twelve railroads beat the average

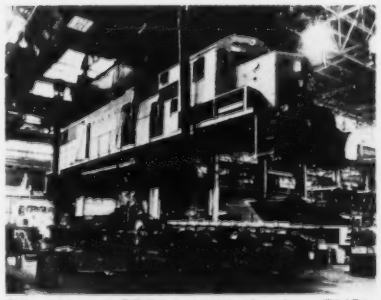
Class I railroads as a whole had an average return on investment of 3.69% in 1983, up from 2.30% in 1982, according to the ICC. Twelve of the 30 reporting roads topped the average. This is how they ranked:

1.	Burlington Northern	8.22%
2.	Kansas City Southern	6.33%
3.	Southern	6.02%
4.	Missouri-Kansas-Texas	5.70%
5.	Chicago & North Western	5.65%
6.	Norfolk & Western	5.33%
7.	Missouri Pacific	4.86%
8.	Union Pacific	4.60%
9.	Elgin, Joliet & Eastern	4.22%
10.	Seaboard System	4.17%
11.	Conrail	4.10%
12.	Chesapeake & Ohio	4.11%

UP's new-power program swings into place

General Motors' Electro-Motive Division is getting the order for the first new locomotives to be acquired by Union Pacific System since it was formed in December 1982 through consolidation of UP, Missouri Pacific and Western Pacific. The $66.5-million order is for 60 3,600-hp SD50 units for MoPac, with deliveries scheduled to begin in September; the units will be equipped with dynamic braking and EMD's latest wheel-slip-control system.

UP System still has motive power stored, and, as Chairman and Chief Executive Officer John C. Kenefick told *Railway Age* recently, "We don't need more horsepower now," and so the purchasing decision was based primarily on an overall look at the economics. Kenefick put it this way (*RA*, April, p. 37): "In prior years, we made up our programs based on traffic projections. We made traffic forecasts, we knew how much horsepower we needed to meet certain traffic volumes, and we just bought enough power to stay ahead of traffic demands. Now, we've been looking more at the total economics. We're looking at possible fuel savings and maintenance savings, and at the fact that even if we don't need additional horsepower it might make sense to upgrade the quality of the fleet. It's a case of balancing things, the purchase price, the operating and maintenance savings, and the fact that locomotives we brought out of storage might not measure up."



Crane lowers SD50 onto its wheels at EMD's LaGrange plant, where 60 of the new locomotives are being built for Union Pacific.

NOTE

ONLY THE FOLLOWING PAGES OF THIS

PUBLICATION HAVE BEEN FILMED

Cov. 1, p. 4-5, 12, 14,

37-39, 78-80, 82-83, 96.